

In the Matter of )  
 )  
The Commercial Mobile Alert System ) PS Docket No. 07-287  
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 )  
To: The Commission

/s/  
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## **EXECUTIVE SUMMARY**

SquareLoop fully supports the Commission's proposed implementation of the directives of the WARN Act, legislation that highlights the critical importance of incorporating mobile devices into the nation's emergency alert warning system. The Company also accepts that the Act specifically determined that deployment of this capability should be entirely voluntary on the part of commercial service providers; there is no obligation for an FCC licensee offering commercial mobile service to incorporate this capability into its network. Thus, there can be no certainty when the extraordinary efforts of the CMSAAC in developing advanced technical standards and protocols for CMA system capability, which recommendations SquareLoop generally endorses, will result in the availability of mobile emergency alert messaging in any community.

SquareLoop offers advanced, wireless, location-based technology that can deliver geographically targeted emergency alerts to users today while the CMSAAC standards are being evaluated and, hopefully, brought to market. The Company's technology makes use of current cellular network architecture which requires point-to-point message delivery. However, as networks migrate to the cellular broadcast and other approaches contemplated in the CMSAAC Report, SquareLoop's technology can evolve and adapt for deployment in that technological context as well. Public safety entities that have identified a need to deliver emergency messages to their citizens' cell phones already have determined that the Company's approach provides a valuable solution that can be deployed immediately, provided the cellular carrier cooperates in allowing the technology to be carried over its network.

The WARN Act clearly limits the scope of the FCC's regulatory authority with respect to CMA availability. Nonetheless, on an interim basis, and in recognition of the critical importance

of emergency alert delivery capability, the FCC should encourage the voluntary adoption of technologies such as SquareLoop's that are precursors to those that will conform to the CMSAAC standards. Technology is available to help save lives today and will fill an urgent need until equipment meeting the CMSAAC standards is available in the marketplace.

## **PROLOGUE**

Recently, a covert tester for the Transportation Security Administration walked through airport security with a simulated bomb nestled in the small of his back. He was stopped, searched, even patted down, but the fake bomb went undetected.

The test took place in Tampa, Florida. But what if a real terrorist set off a bomb or released a dangerous substance in any American city? How would we, how should we, notify the public and organize the evacuation of the city to minimize the public safety risk?

Since 9/11, we have been reminded continuously that there are events, both manmade and natural, that require officials to immediately notify the public. What was needed then, and still is needed today, is an effective means to reach people on the one communications device most have with them at all times: their cellular telephone.

Certainly television and radio broadcast stations will transmit emergency alerts during the next disaster in the Nation's capitol or any other community. But substantial portions of the population are not watching television or listening to the radio at any particular moment. Even then, by their nature, these emergency transmissions are one-too-many broadcast messages, not individualized communications directed to differentiated market or geographic segments. And they require ongoing access to receivers that do not fit easily in a pocket and so do not remain ever present at the moment they are most needed.

The most ubiquitous communications device today is the cellular telephone. With over 250 million subscribers in the US alone, it has become the rare individual who does not carry a cell phone and, for better or worse, almost everyone leaves the device on at all times. Those that have resisted the cellular call usually are only steps away from someone who is equipped with

one. There simply is no communications delivery system better able to reach the American public almost instantaneously with geographically targeted alerts.

The WARN Act provides for establishment of a Commercial Mobile Alert System by which commercial mobile service providers may elect, but are not required, to transmit emergency messages to the public once standards to do so are adopted. But technology that can deliver mobile emergency alerts via cellular networks is available today.

The SquareLoop Mobile Alerting Network can deliver dynamic, geographically targeted messages to mobile handsets. It also provides public officials with the ability to send unique alert tones and vibrating cadences, text-to-speech for the visually impaired, and messages that are unhindered by the current character limits of SMS messages.

The Commission cannot require wireless providers to offer a service that the statute identifies as voluntary, and the standards for that service must be based on recommendations of the Advisory Committee called for by the statute.

Nonetheless, on at least an interim basis while the process required by the WARN Act is in progress, the FCC can encourage its licensees to open their networks to technologies that permit public safety and other alert aggregators to deliver emergency messages when doing so would cause no network harm and would provide a public service that the FCC has identified as one of its highest priorities. It may not be possible to do more until the WARN Act process has been completed, but the Commission's overarching obligation to promote the use of radio to enhance the safety of the public requires that it do no less.

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

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To: The Commission

**COMMENTS OF  
SQUARELOOP, INC.**

SquareLoop, Inc. (“SquareLoop” or the “Company”), in accordance with Section 1.425 of the Federal Communications Commission (“FCC” or the “Commission”) rules and regulations, respectfully submits its Comments in the above-entitled proceeding.<sup>1</sup> The FCC adopted the *NPRM* in fulfillment of its statutory obligations under the Warning Alert and Response Network (“WARN”) Act enacted by Congress in 2006, which directed the FCC to adopt rules governing commercial mobile service alerting capability for Commercial Mobile Service Providers (“CMSPs”) that choose to transmit emergency alerts.<sup>2</sup> This undertaking also is consistent with the Commission’s ongoing obligation to “adopt rules to ensure that communications systems have the capacity to transmit alerts and warnings to the public as part of the public alert and warning system,” consistent with the President’s “Public Alert and Warning System” Executive Order.<sup>3</sup>

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<sup>1</sup> *In the Matter of the Commercial Mobile Alert System*, PS Docket No. 07-287, Notice of Proposed Rulemaking, 22 FCC Rcd 21975 (2007) (“*NPRM*” or the “Order”).

<sup>2</sup> Security and Accountability For Every Port Act of 2006 (SAFE Port Act), Pub.L. 109-347, Title VI-Commercial Mobile Service Alerts (“WARN Act”).

<sup>3</sup> *See Public Alert and Warning System*, Exec. Order No. 13, 407, 71 Fed. Reg. 36975 (2006), §3(b)(iii).

The executive and legislative branches of our Federal Government have made clear their conviction that Americans must have the opportunity to protect themselves against personal injury, even death, and property damage by receiving timely, accurate warnings of impending disasters or other emergencies. These Federal directives mirror the overarching predicate of the Communications Act – promotion of the safety of life and property through the use of wire and radio communication.<sup>4</sup>

SquareLoop is committed to this same effort. Its advanced, wireless, location-based technology can deliver geographically targeted emergency alerts to users today. The Company works on a daily basis with public safety entities and others that appreciate just how critical it is to deliver messages of the type contemplated by the Commission and, therefore, that wish to “opt in” to receive this service.

The Company’s technology makes use of current cellular network architecture which requires point-to-point message delivery, as described more fully below. As networks migrate to the cellular broadcast and other approaches contemplated in the Commercial Mobile Service Alert Advisory Committee (“CMSAAC”)<sup>5</sup> Report appended to the Order, SquareLoop’s technology can evolve and adapt for deployment in that technological context as well. Yet the timing of that migration cannot be certain.<sup>6</sup> According to CMSAAC, it will be at least thirty (30) months before initial testing and deployment will be completed, and the Committee

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<sup>4</sup> The Communications Act of 1934, as amended, 47 U.S.C. § 151 (“CA”).

<sup>5</sup> The WARN Act directed the FCC to establish an Advisory Committee, known as CMSAAC, comprised of representatives of state and local governments, emergency response providers, tribal governments, subject matter experts and other stakeholders and interested parties to develop and submit to the FCC recommendations for technical standards and protocols required for Commercial Mobile Alert (“CMA”) system capability. WARN Act at § 603(a).

<sup>6</sup> See, e.g., *NPRM* at ¶ 32. Nor can it be assured that new technological approaches, even if adopted by some carriers in some markets, will be rapidly deployed in all areas of the country with cellular coverage. Much like the gradual phase out of analog cellular service, a process that has taken two decades to complete, existing “2G” systems may remain operational in certain areas for substantial periods after the more advanced technologies envisioned in the CMSAAC Report are deployed elsewhere.



correctly notes that factors outside the operators' direct control will affect the deployment and availability of service.<sup>7</sup> The availability of subscriber units with Commercial Mobile Alert Service ("CMAS") capability as contemplated in the CMSAAC Report will come even later.

SquareLoop appreciates that this process must be undertaken, because it is the path required by the statute. The Company assumes all stakeholders will proceed in good faith to ensure that these capabilities will be available at the earliest possible date and commits to support that effort. However, on an interim basis, and in recognition of the critical importance of emergency alert delivery capability, the FCC also should encourage the voluntary adoption of technologies such as SquareLoop's that are precursors to those that will conform to the CMSAAC standards. Technology is available to help save lives today and will fill an urgent need until equipment meeting the CMSAAC standards is available in the marketplace.

#### **I. THE FCC'S PRIMARY OBLIGATION IS TO PROMOTE THE SAFETY AND SECURITY OF AMERICANS THROUGH COMMUNICATIONS CAPABILITIES.**

The Communications Act directs the FCC to regulate communications "for the purpose of the national defense" and "for the purpose of promoting safety of life and property."<sup>8</sup> The Commission historically has treated this statutory charge as the most fundamental of its obligations. It has not hesitated in reaching decisions that squarely identify protection of the public's safety as its primary responsibility.<sup>9</sup>

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<sup>7</sup> See CMSAAC Report at § 12.2.1. "There are factors outside of the CMSP's direct control that will influence the deployment and availability of CMA service. These factors include manufacturer development cycles for equipment in the CMSP infrastructure, manufacturer commitment to support the delivery technology of choice by the CMSP, and mobile device manufacturer development of the required CMAS functionality on the mobile devices."

<sup>8</sup> CA at § 151.

<sup>9</sup> See, e.g., Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Memorandum Opinion and Order*, CC Docket No. 94-102, 18 FCC Rcd 23383 (2003); Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, *Report and Order, Order on Reconsideration and Further Notice of Proposed Rulemaking*, CG Docket No. 03-123, 19 FCC Rcd 12475 (2004).

The instant proceeding, although triggered by Congressional action, reflects this bedrock

Commission commitment:

By starting this rulemaking today, we take a significant step towards implementing one of our highest priorities – to ensure that all Americans have the capability to receive timely and accurate alerts, warnings and critical information regarding impending disasters and other emergencies irrespective of what communications technologies they use. As we have learned from recent disasters such as the Southern California fires, the Virginia Tech shootings, and the 2005 hurricanes, such a capability is essential to enable Americans to take appropriate action to protect their families and themselves from loss of life or serious injury. This rulemaking represents our continued commitment to satisfy the mandate of the Communications Act that the Commission promote the safety of life and property through the use of wire and radio communication.<sup>10</sup>

This NPRM is the latest example of our commitment to enhance the redundancy, reliability and security of emergency alerts to the public by requiring that alerts be distributed over diverse communications platforms....A comprehensive mobile alerting system would have the ability to reach people on the go in a short timeframe, even where they do not have access to broadcast radio or television or other sources of E[mergency] A[ler]t S[ervice]. Providing critical alert information in this respect will ultimately help avert danger and save lives.<sup>11</sup>

The WARN Act directed the FCC to create the CMSAAC to prepare recommendations for CMAS technical requirements to be considered in a rulemaking proceeding. As described in the Order, the CMSAAC satisfied its obligation and delivered the necessary report to the FCC in a timely fashion. The path laid out in that report represents stakeholder efforts to achieve scalable, cost-effective CMAS capability that can be deployed in some reasonable timeframe. SquareLoop fully supports consideration of the substance of the CMSAAC report in the instant proceeding as consistent with the WARN Act directive.

However, it is in no way contrary to the WARN Act for the Commission to discharge its obligations under its enabling statute by supporting carrier deployment of CMAS approaches such as the Company's on an interim, voluntary basis. It never can be incorrect or *ultra vires* for

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<sup>10</sup> NPRM at ¶ 3.

<sup>11</sup> *Id.* at ¶ 4.

the FCC to encourage its licensees to go beyond what is required by law when the safety of human life is at stake.

## **II. SQUARELOOP AND ITS TECHNOLOGY**

SquareLoop is a commercial provider of wireless location-based services. The Company was founded by industry veterans with technical, operational, financial and marketing expertise relating to commercial wireless systems. Their collective experience in the deployment and operation of wireless networks led the founding team to identify an unsatisfied demand for a cost-effective, privacy-protecting means of delivering advanced, geographically targeted public safety and other alerts to mobile devices. SquareLoop has licensed several patents from The MITRE Corporation that cover the technical approach to disseminate geographically targeted messages. Attached as **Appendix A** is a White Paper that provides an overview of the Company's technology and how it is used to deliver emergency alerts to the public.

The SquareLoop technology does not track specific subscriber locations using a network-based Location-Based-Services ("LBS") solution. Instead, it places the intelligence in the handset. The location, valid timeframe and content are contained in a message that is sent to individual devices. An application on the device itself determines whether the device is in the target area for the message. If it is, the message is displayed by the device; if not, it is ignored. Because the message acceptance process is handled at the phone and requires an application that runs in the background on the device, subscribers must "opt-in" to receive the service. This approach minimizes the use of network resources, in particular network capacity and position-determining equipment, while at the same time maintaining subscriber location privacy, since the network does not track the location of subscribers on a routine basis.

The Company's technology is network and location-determination agnostic. It can work with Global Positioning System ("GPS"), cell ID, network-based triangulation or other methods that determine device location. The only requirement is that the subscriber device be location-aware and running the program.

SquareLoop offers the solution as a hosted application. The carrier over whose network the messages are sent need only permit subscribers to load software onto the device (code signed) and allow SquareLoop to communicate from its servers to the device. No modification of the network itself is required. However, as noted by the CMSAAC and the FCC, today's network technology supports only point-to-point messaging.<sup>12</sup> SquareLoop's current approach reflects that fact with the inherent limitation in terms of scalability. The Company's approach likely will change as network technology advances permit CMAs to be transported via cell broadcast or other innovative transport technologies.<sup>13</sup> At present, the Company's service cannot exceed the technical boundaries of the carrier networks, but SquareLoop nonetheless has developed a highly effective means of delivering emergency alerts within those confines.

In addition to its dynamic geographic targeting capability, which requires a handset capable of running applications in the background, SquareLoop also provides several other key features either recommended by the CMSAAC or designated as important for future development on handsets that are not yet capable of running an application in the background:

- Special sender-defined alert tones and vibrating cadences increase the likelihood that critical messages are not ignored. Unique vibrating cadences alert hearing impaired individuals or users who have their devices set to vibrate for critical messages.
- Longer text-based messages with embedded graphics provide instructions, not just warning. These messages enable officials to provide needed information and

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<sup>12</sup> *Id.* at ¶ 8.

<sup>13</sup> CMSAAC Report at § 12.2.1.

specific instructions so that recipients can take immediate action without the need to seek additional information from other sources. SquareLoop also is able to deliver audio files to the phone for visually impaired individuals.

Thus, even subscribers with devices that do not have the capability of receiving the dynamic geographic targeting capability of SquareLoop's service still can obtain these other features that also were recommended by the CMSAAC.

SquareLoop provides an additional capability that goes beyond the recommendations of the CMSAAC: the ability to send geographically targeted messages based on past location. This historical messaging capability provides the ability to deliver messages to people who were potentially exposed to toxins or infections. Historical messaging provides a mechanism to reach back in time to contact these individuals, thus potentially minimizing the impact of these incidents. Importantly, this is done by the device keeping track of its own location, not by SquareLoop or any other entity tracking the location of the subscriber.

### **III. WARN ACT**

The WARN Act is further confirmation of the essential role wireless communications has come to play in the day-to-day lives of the American public. It is only a few short decades since the first cellular system was deployed in this country, yet some 250 million Americans now subscribe to wireless service. Wireless subscribership has become so common, such an assumed part of the daily fabric, that those who do not have a cell phone have become the exceptions.

The WARN Act recognizes this fundamental, irreversible shift in public behavior. As noted by the Commission, "In times of emergency, Americans rely on their mobile telephone service to receive and retrieve critical, time-sensitive information."<sup>14</sup> The FCC already had begun the process of expanding the nation's emergency alert system ("EAS") from its analog television and radio roots to add transmission mediums such as digital television and radio

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<sup>14</sup> *NPRM* at ¶ 4.

broadcasters and Direct Broadcast Satellite.<sup>15</sup> The WARN Act directs the Commission to establish rules for extending this capability to commercial mobile systems as well.

However, there are fundamental differences between the current EAS rules and the statutory requirements of the WARN Act. Most significantly, Congress has specified that CMAS deployment on the part of commercial operators is entirely voluntary. The statute requires the FCC to establish procedures whereby CMSPs must advise the FCC and their own subscribers if they elect not to transmit emergency alerts.

The reasonableness of that approach is obvious from the perspective of carriers. By making participation in CMAS optional for wireless mobile operators, as opposed to the mandatory participation imposed on the broadcast industry, Congress has relieved this industry segment of an unfunded federal mandate, the burden of which typically falls most heavily on smaller, often rural carriers. Those that consider the cost of providing this service to be beyond their capabilities will have an unqualified opportunity to “opt-out.”

How those election results will be viewed from the subscriber perspective is unknown. It certainly is to be hoped that mobile carriers will view CMAS, if not as a public policy imperative, then as a competitive opportunity, a way to distinguish themselves from their peers in an increasingly consolidated, homogenized mobile wireless marketplace. Substantial industry effort was contributed toward the development of the CMSAAC report. It is reasonable to assume that the report proposes service architectures and requirements that will foster a healthy carrier appetite for delivering CMAS to the public.

But even if that proves to be the case, the CMAS solution defined in the CMSAAC report will not enable public safety entities to send emergency alerts or the public to begin receiving them until 2011 at the earliest. This is not an unusual amount of time given the standardization

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<sup>15</sup> *Id.*

and equipment vendor processes that will be required. In fact, the Company will be pleased if all the work contemplated in the report is finished within the time estimated. It is a very long time, however, when considering the public safety improvements that will be foregone in the interim, improvements that would be provided by deployment of SquareLoop's already available technology.

The Company utilizes existing carrier network capabilities to deliver geographically targeted emergency alerts, not according to the proposed CMSAAC standard that assumes cell broadcast or other system architectures that are not yet available, but using a technology and protocols that can fill this emergency alert gap immediately. Public safety entities that request the opportunity to take advantage of this approach should not have their requests denied by a carrier, absent a showing that using the technology will harm or require modifications to the network.<sup>16</sup>

Up to the present, mobile carriers generally have not been responsive to such requests.<sup>17</sup> This may be the result of the intensive industry effort devoted to CMSAAC or the expectation that a CMAS standard will be established pursuant to the WARN Act at some future date. Pending action on the report and adoption of final standards, the Commission might prompt a more proactive, interim response from the CMSP community with a reminder that they, like all FCC licensees, have an obligation to serve the public interest. Cooperation with public safety officials surely would fall under that primary licensee obligation.

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<sup>16</sup> Of course, emergency alerts delivered via CMAS will utilize some amount of network capacity. The same is true for EAS warnings sent over television and radio broadcast systems. Given the critical importance of these alerts and the requirement that individual subscribers must affirmatively "opt in" to receive the SquareLoop service, their use of network capacity should not be considered "harmful" to the network.

<sup>17</sup> The Company is pleased to note it has entered into a national Co-Marketing Agreement with Sprint Nextel Corporation ("Sprint") for both its iDEN and CDMA networks. Contra Costa County, California is the first customer under that agreement and is deploying SquareLoop's technology to provide emergency alerts to Sprint subscribers that "opt in" to receive those messages from among the County's more than One Million citizens.

#### **IV. VOLUNTARY DEPLOYMENT OF AVAILABLE CMAS TECHNOLOGY IS NOT INCONSISTENT WITH THE WARN ACT OR THE EFFORTS OF CMSAAC, AND IS CONSISTENT WITH THE COMMUNICATIONS ACT**

SquareLoop recognizes that the WARN Act delineates the parameters of FCC regulatory authority with respect to CMAS. In addition to detailing the process the Commission is required to follow in establishing CMAS standards, the Act also prohibits the FCC from rulemaking authority under that title except as expressly permitted in the statute.<sup>18</sup>

The Company accepts this unequivocal statutory prohibition and is in no way suggesting that the FCC attempt to circumvent it. It is not proposing that the Commission seek to adopt rules or policies that would make participation in CMAS even a *de facto* requirement. It is not recommending that the FCC endeavor to short circuit or otherwise compromise the CMSAAC technical review or standard setting processes.

But compliance with the WARN Act does not require the FCC to ignore its own finding that “Providing critical alert information in this [CMAS] respect will ultimately help avert danger and save lives.”<sup>19</sup> In light of that conclusion, it is entirely appropriate for the Commission to encourage carriers to cooperate with governmental jurisdictions and agencies that wish to deploy the SquareLoop solution, or any other interim emergency alerting solution, that do not pose risks of technical harm or require changes to their network while the standard setting and manufacturing processes run their course.

This policy approach would be consistent with the Commission’s public interest finding with respect to inter-carrier roaming rights and its more recent acknowledgement of the user benefits that can flow from open access on wireless systems. For example, in determining that there should be a right to automatic roaming upon reasonable request from a technologically

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<sup>18</sup> WARN Act at § 602(d).

<sup>19</sup> *NPRM* at ¶ 4.



compatible carrier, the FCC stated that, “Given the current CMRS market situation and wireless customer expectations, we find it is in the public interest to facilitate reasonable roaming requests by carriers on behalf of wireless customers, particularly in rural areas. In other words... a CMRS carrier may make an automatic roaming request on behalf of its subscribers.”<sup>20</sup> The same reasoning applies in this instance. A public safety entity should be permitted to make a reasonable request for a carrier to utilize SquareLoop’s emergency alert technology on behalf of itself and the public to which it wishes to send emergency messages.

The Commission conducted a similar analysis in considering whether to adopt an open access requirement for the 700 MHz C Block spectrum. The FCC examined the arguments on both sides of this highly charged debate as to whether or not carriers should be required to open their platforms to devices and applications not of their choosing. In adopting the requirement, the Commission reached the following conclusion:

...we believe that it is appropriate to take a measured step to encourage additional innovation and consumer choice at this critical stage in the evolution of wireless broadband services, by removing some of the barriers that developers and handset/device manufacturers face in bringing new products to market. By fostering greater balance between device manufacturers and wireless service providers in this respect, we intend to spur the development of innovative products and services.<sup>21</sup>

The Commission adopted the requirement with the proviso that such applications and devices “...comply with reasonable conditions related to management of the wireless network (*i.e.*, do not cause harm to the network).”<sup>22</sup> The recent announcement that the reserve price has been met on the 700 MHz C Block, thereby ensuring that open access will apply to that spectrum, prompted the following comment from Chairman Martin as reported in various trade

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<sup>20</sup> *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265. Report and Order and Further Notice of Proposed Rulemaking, 22 FCC Rcd 15817 at ¶ 28 (2007).

<sup>21</sup> *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT Docket No. 06-150, Second Report and Order, 22 FCC Rcd 15289 at ¶ 201 (2007).

<sup>22</sup> *Id.* at ¶ 206.

publications: “The winner of the auction will be required to offer consumers more options for devices and more choice among wireless applications than wireless companies do now. We hope that the freedom that will develop as the new spectrum opens up will carry over into the existing cellular network.”

If the public interest demanded that innovative consumer products and services not be barred from deployment on a carrier network, surely a contrary conclusion could not be reached in considering whether mobile emergency alert technology, technology with the sole purpose of protecting, even saving, human lives, also should be accepted upon a reasonable request, provided, of course, that it causes no technical harm. There can be no more compelling public interest than the one at stake in CMAS considerations.

There also are practical reasons for the FCC, indeed the wireless industry, to encourage pre-standardization deployment of CMA approaches such as the Company’s. The CMSAAC Report is appropriately cautious about its ability to foresee every possibility in the CMA future. For that reason, it urges the FCC to treat the report as a “living document, with periodic updates to account for experiences with initial CMAS deployments and experiences with new technologies and their applicability to CMAS.”<sup>23</sup>

That type of real world experience could be obtained from deployments by SquareLoop customers during this interim period. They will provide a test ground for the public’s interest in and use of mobile emergency alert messaging with geographical targeting. The information will provide valuable input for carriers and manufacturers alike about products and services that should be produced. It also will offer an initial test ground for the complex collection and distribution aspects of emergency alerting, tasks that will take time to develop and refine through

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<sup>23</sup> CMSAAC Report at § 5.

trial and error that is best undertaken on the more limited scale typical of the Company's current projects.

## **V. CONCLUSION**

The laudable objective of the WARN Act cannot be doubted. Congress has recognized the increasingly vital role mobile communications plays in the lives of virtually all Americans. The statute provides a path by which the commercial mobile industry will have the opportunity, but not the obligation, to provide for the transmission of emergency alerts to the one device that is always near and always on.

But the virtues of the legislation – its focus on mobile transport and reliance on the voluntary actions of CMSPs in the marketplace – could delay or even prevent the very service Congress intended to promote. The existence of the WARN Act and its prospective standardization process may cause carriers to ignore reasonable requests to deploy currently available technology in favor of future solutions that may or may not ever be brought to the marketplace. The public should not be precluded from enjoying alternative, interim services that could be provided while the CMSAAC processes are completed. The fact is that the entirely voluntary nature of CMAS means there is no guarantee that the service will ever be offered. In the end, the good may have been sacrificed for the perfect.

The Commission already has determined that the availability of CMAS may save lives. It needs no other authority or finding to encourage CMSPs to cooperate with reasonable requests to accommodate the interim deployment of mobile emergency alerting systems.

## **APPENDIX A**



# **SquareLoop's Geographically Targeted Messaging**

## **Technology Overview and Use Cases**



**Geographically Targeted Messaging**



## Overview

SquareLoop, Inc. provides a revolutionary new way to geographically target messages to mobile network devices such as phones, PDAs, and laptops. Key applications include public safety alerts to both first responders as well as citizens, content delivery such as traffic alerts, and mobile marketing.

Imagine...

- What if police could send AMBER Alert messages to the mobile phone of people who were in the area of an abduction, even if that abduction occurred hours in the past?
- What if someone could tell you about a traffic accident on the road ahead of you in time to allow you to change your route?
- What if you could receive special notices if you were near your favorite restaurant and they were having a special tasting menu?



SquareLoop's technology does not track specific subscriber locations using a network based Location-Based Services (LBS) solution but puts the intelligence in the handset thus maintaining subscriber location privacy. This approach minimizes network resources (network capacity and position determining equipment) needed to deliver geographically targeted messages.

Because SquareLoop's technology is network and location-determination agnostic, it can work with Global Positioning System (GPS), cell ID, network-based triangulation, or similar methods that determine device location. The only requirement is that the subscriber device be location-aware and can run a program.

Additional key technology features:

- **Message delivery based on the device's current or past location** – location targeting adds a layer of message relevancy eliminating unnecessary messages.
- **Specialized alert-tones** – sender defined alert-tones differentiate SquareLoop messages from normal mobile device sounds. Unique vibrating cadences can differentiate messages for hearing impaired subscribers as well as for people in meetings.
- **Complete and descriptive messages** – messages can include long text beyond SMS limitations with embedded graphics providing descriptive and full instructions.
- **Audible messages** – some phones can play a text-to-speech version of the message for visually impaired subscribers – this feature can also be useful for delivery of traffic alerts while driving.
- **Message authentication** – authentication keys for each message ensures that messages are genuine.



- **Easy response capability** – messages can provide confirmation of message delivery and allow for easy Yes/No or text response to sender.
- **Single system nationwide** – subscribers only register once for national delivery of locally controlled location-specific content such as community alerts.



SquareLoop has licensed several patents from The MITRE Corporation that covers the technical approach of using broadcast mechanisms to disseminate geographically targeted messages. Simply put, the location, valid timeframe, and content are contained in a message that is sent to individual devices. An application on the device itself determines whether it is in the message's target area. If the message applies to the device, the application displays a message, such as an alert, text, graphics, images, or hyperlinks. The patents also cover filters for other criteria, such as speed or direction of travel.

### ***How It Works***

Subscribers to the Mobile Alert Network have a special application that runs in the background on their phone. Subscribers with new phones from participating carriers will have this application loaded on their phone at the time of purchase and other subscribers can download the application during the registration process for the Mobile Alert Network. The application periodically takes a poll of the phone's location and stores it on the subscriber device.

Sending a message is a simple process that can be broken down into three easy steps: define, send, and receive.

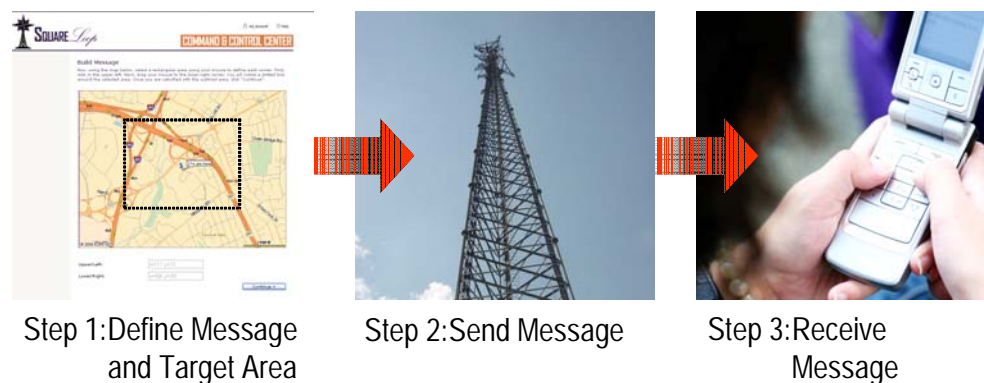


Figure 1. How It Works

#### **1. Define Message**

Designated users define messages, period of message time relevancy and the target delivery locations. Predefined messages, locations and time windows simplify and standardize most messages to ensure clear and accurate phrasing. This step also can be automated through an interface with existing content generation systems.

#### **2. Send Message**

The target location is combined with the message and sent to subscribers through commercial cellular networks via SMS, TCP/IP, or other broadcast systems, such as paging and satellite communications.



### **3. Receive Message**

The message is received by a special program that subscribers easily download to their device during the service registration process. This special program compares the geographic target of the message with the phone's current location. If there is a match, the program sounds the alert and displays the message. If there is not a match, the application ignores the message. In this way, the fact that the phone was either in or not in the area is not transmitted from the subscriber's phone thus ensuring subscriber privacy.





## SquareLoop Technology (Core Application)

SquareLoop technology creates, sends, and manages geographically targeted messages for mobile devices. The overall system can be thought of as four components: the content source, the subscriber interface, the message delivery engine, and the device application.

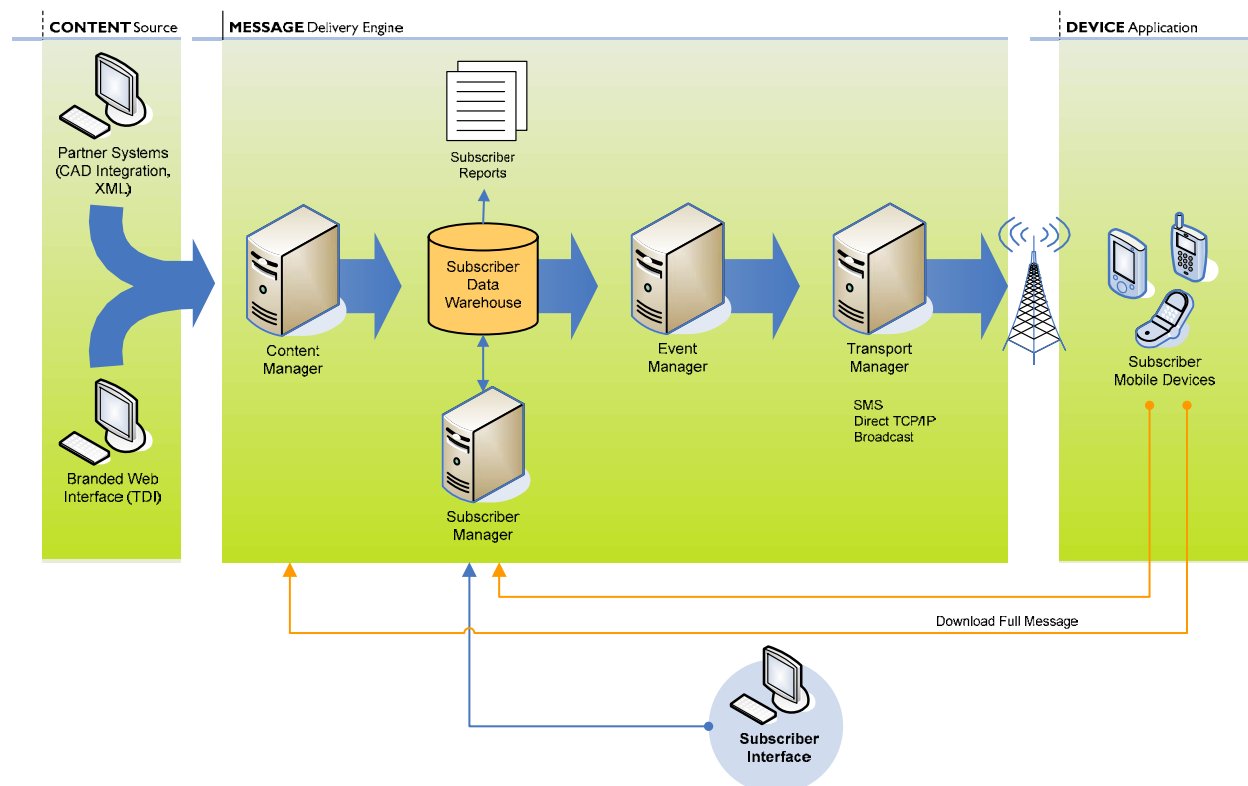


Figure 2. SquareLoop Technology—Core Application

Each component plays a uniquely important role in the overall core application:

- **Content Source**

The Partner System Interface is a computer-to-computer interface that allows messages to be generated from partner systems such as Computer Aided Dispatch (CAD), incident management, or campaign management systems. Typically constructed as a Web service using XML, this interface allows for easy integration of other systems. Standards-based protocols such as the Common Alerting Protocol (CAP) version 1.1 and earlier are supported out of the box.

Additionally, the Mobile Alert Network also comes with a web interface called the Tactical Display Interface™ (TDI). The TDI allows for rapid implementation requiring only a PC with the Internet Explorer 6.x or later web browser and internet connection. Users can define messages by drawing the target area on a map, entering the target group and message content.





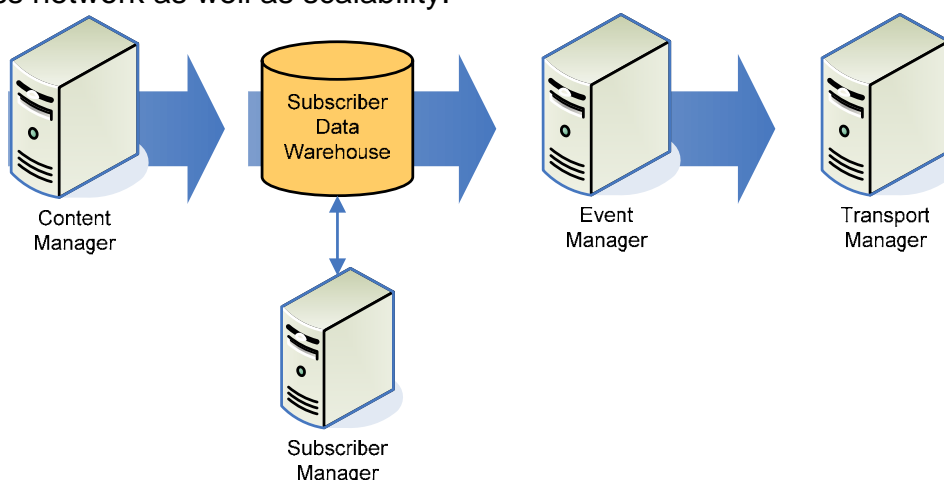
### ▪ **Subscriber Interface**

The Subscriber Interface allows individual subscribers to download the application to their handset and then manage their account by selecting what types of content they wish to receive, how frequently they wish to receive it, and how they wish to be notified. The full subscriber interface connects directly to the Message Delivery Engine and is accessed via computer, but a simplified version also is available on the mobile device to allow for quick subscribing or unsubscribing from content services. The subscriber interface can be branded with a content partner to provide a seamless subscriber experience.



### ▪ **Message Delivery Engine**

The Message Delivery Engine processes messages from the Web interface or external program interface and is comprised of four major components: the Content Manager, Subscriber Manager, Event Manager and Transport Manager. The components allow for customization such as different transport managers for each wireless network as well as scalability.



- **Content Manager** – The content manager maintains all message content including messages in multiple languages, alert tones, vibrating cadence styles and different graphics sizes to fit multiple sized phones. Multiple content pieces are combined to match the subscriber and phone capabilities.
- **Subscriber Manager** – The subscriber manager maintains information on the services subscribers are enrolled in along with their delivery preferences. Subscribers can be enrolled in multiple services to receive information such as public safety community alerts, weather or traffic alerts, or marketing messages.
- **Event Manager** – The system is designed to prioritize messages with urgent messages such as alerts to life threatening situations being sent before other messages.
- **Transport Manager** – The system is designed to work efficiently with wireless networks and therefore is “tuned” to each network. A separate transport manager can be deployed for each wireless network providing increased communication efficiency and scalability.



- **Device Application**

The Device Application runs on the subscriber device and receives messages from the Message Delivery Engine. The application monitors the device's location and determines if messages should be displayed or ignored.



Subscriber  
Mobile Devices

### ***Message Payload***

The Device Application supports delivery of longer text, pictures and audio. Future versions of the application will take advantage of new capabilities being incorporated into mobile devices. For example, a message could leverage a mobile Web page to deliver dynamic content to the subscriber, or the message could be configured to deliver unique coupon codes to each subscriber.

Picture and video phones are now becoming prevalent on the market and offer another valuable way to send content. An AMBER Alert could contain not only the picture of a missing child but video footage from a security camera of the abduction. Similarly, weather providers can provide Doppler RADAR maps or traffic providers can send pictures of the accident affecting traffic.

### ***Message Filtering***

Message delivery can be filtered by a number of factors, such as location, time, speed, or direction of travel.

- **Current Location**

To determine location, SquareLoop's technology relies on the data that already exists on the subscriber's device. Location-specifying functionality varies by carrier and device model. For example, some mobile phones contain autonomous GPS chips while other phones rely on their network to determine location. At the coarsest level of granularity, SquareLoop will use the closest cell tower to determine location. However, in many cases, the location resolution can be as little as 100 meters.

- **Historical Location**

The Mobile Alert Network can also deliver messages based on the subscriber's past location. Applications for historical location messaging include biological, chemical or nuclear exposures as well as pandemic outbreaks which often take time to trace back to the original location of the outbreak, e.g. anthrax attack in Washington DC, Polonium 210 poisoning in London. Historical messaging can also be used for mobile marketing where an advertiser may want to send a message to everyone who attended a sporting event the day before.

Subscriber privacy is still maintained with historical messaging. The SquareLoop Device Application periodically determines its location and stores it in a historical location list on the subscriber's phone. Historically targeted messages contain a valid timeframe in the past. The Mobile Alert Network application on the phone receives the message and compares the target location to the locations stored on the device during the time valid timeframe. If the location on the device falls within the target area and time window of the message the application displays the message.



- **Time**

The Mobile Alert Network supports the concept of a valid timeframe for a message for situations where a subscriber may be outside of the target area when the message is sent, but enter the target area while the information in the message is still relevant. For example, a traffic accident may cause a backup that is expected to last for 90 minutes. The system can be instructed to send a message to subscribers within two miles of the accident. A subscriber who was fifty miles away when the message was sent would receive the message if they moved within two miles of the accident during the next 90 minutes.

- **Speed**

Some location technologies (such as GPS), can determine speed and, thus, open the possibility for the SquareLoop application to differentiate message recipients based on speed of travel. For example, marketing messages can be designed to only be activated when the mobile device is traveling less than five miles per hour to minimize the number of people who receive the message while driving or limit messages to only those people in a sports arena and eliminate subscribers in vehicles outside of the complex.

- **Direction of Travel**

The technology can also be implemented to use direction of travel as a message differentiator. This feature can be extremely helpful in delivering messages to people traveling towards an accident, but not to those who have already passed it.

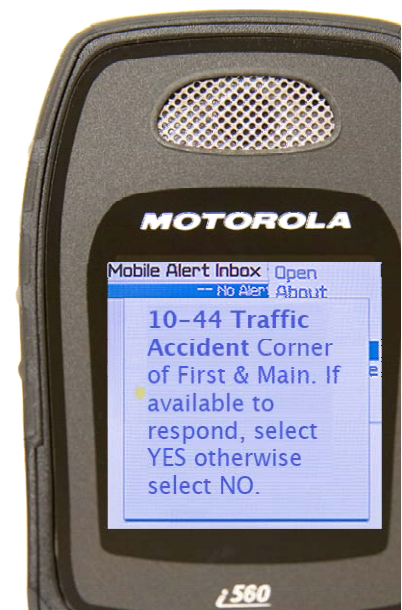
- **Other Factors**

The technology is incredibly flexible and the patents granted cover using other information available to the receiver. For example, a phone that contains the subscriber's calendar could use that information to determine if a certain message should be delivered or archived.

### ***Message Response***

In many circumstances, it is important to systematically capture response from recipients of messages. For example, dispatchers can send a message to officers within a certain area of a traffic accident and ask for yes / no responses if officers receiving the message can respond to the incident. SquareLoop supports four types of response capabilities:

- **No Response** – The default mode does not capture any response to messages
- **Read Receipt** – Provides positive confirmation that the subscriber read the message
- **YES / NO** – Recipients can answer yes or no to the message
- **Text** – Recipients can provide a freeform text message response to the message





### ***Location Privacy***

SquareLoop's unique approach to broadcasting geographically targeted messages and using the subscriber's device to determine relevancy means that individual subscriber movements are never tracked.

Additionally, to minimize impact on the networks, SquareLoop may periodically send major market information indicating the relative location of a subscriber. For example, the application may know that a user is in Boston and not San Diego, and will not send messages targeted to the West Coast to that subscriber.

### ***Authentication***

Message authenticity is ensured through the use of authentication keys sent from the message delivery engine to the mobile device. Many community alerting systems used today rely on SMS which allows anyone who knows your mobile phone number to send you a message as if it came from the original source. This additional level of authentication therefore eliminates the possibility of SMS spoofing.

### ***National System – Locally Controlled***

Today's community alerting systems require registering in each local jurisdiction whereas the SquareLoop solution greatly reduces the efforts for communities to register subscribers in an opt-in basis because subscribers who have registered in one community are already registered for other communities. Today, someone living in Loudon County (a suburb of Washington DC) and commuting to work in Washington DC would need to separately register in Loudon, Fairfax, and Arlington Counties as well as in Washington DC to be alerted to local incidents as they commute to work. This potentially subjects subscribers to four times the number of alerts as is necessary causing alert fatigue whereby subscribers ignore the alerts or unsubscribe from the systems altogether. The SquareLoop solution supports a single nationwide registration allowing for delivery of geographically relevant alerts, greatly reducing the number of alerts received by subscribers.

### ***Easy Implementation***

SquareLoop offers this solution as a hosted application. SquareLoop manages the dedicated connections into the nationwide carriers ensuring minimal message latency with high availability at the lowest possible cost. The modular architecture is scalable allowing for easy expansion as the number of subscribers and messages grow. The only requirement for implementation is a PC with Internet connectivity running IE 6 or later. The Mobile Alert Network can also be easily incorporated into existing systems using the Common Alerting Protocol (CAP) versions 1.0 or 1.1.





## Application Scenarios

The following three scenarios illustrate the benefits of the SquareLoop technology.

### ***Enhanced AMBER Alert***

Each year, approximately 250 AMBER alerts are issued for children who are abducted. Authorities disseminate abduction information a number of ways, including public service announcements, highway signage, and posters. SquareLoop technology can significantly enhance these efforts by quickly reaching citizens and first responders via mobile phone, and also improve outreach efficiency by only sending location-relevant messages.

For example, consider an abduction that takes place in a city outside of Washington, DC. Emergency managers would initiate the Enhanced AMBER Alert message by defining geographic targets for messages and entering the message text into the system. As illustrated in the figure below, emergency managers sent a message to subscribers near the abduction area looking for specific information and a callback number to provide information.



Figure 3. AMBER Alert Message Examples

A different message with a different callback number can be sent to subscribers in the expanded area. This enables police to prioritize inbound calls knowing that calls to the first line are from subscribers who were confirmed to be in the area of the abduction.

Once the message and target area are defined, the Mobile Alert Network server prepares the message into the proper format and sends it to subscriber's devices. Subscribers within the target area will hear a special tone for an AMBER Alert. Since this tone differs from others on their device, they will know that it requires immediate attention.



In some situations, the emergency manager may want to have a callback number defined in the message. For example, if the police are looking for clues based on people who may have seen a suspect vehicle, they can include a callback number that the message recipient can quickly provide information to authorities.

As time passes, and the potential travel area for the abductor increases, new Enhanced AMBER alerts can be issued, expanding the target area. Subscribers who have already received earlier AMBER alerts would not receive duplicate warnings.

SquareLoop's technology provides many benefits for enhanced AMBER alerts. For example, because messages are not restricted to the 140-character limit as they are with normal SMS messages, messages are clearer and can provide more information to the end user including a photograph of the abducted child or an image of the type of car that was used for the abduction.

### ***Traffic Management Scenario***

A traffic information organization wants to alert their customers of a major traffic jam on I-95 south of Baltimore. By using SquareLoop's technology, they can define the boundary affected by the traffic jam, create a message giving alternative route instructions to avoid the area, and then send the message to the defined geographic area. Their customers who are within the targeted area will be alerted to the situation. In addition, because of a message time window that is also created, customers who later drive into the targeted area also will receive the message. The solution allows longer messages to be sent informing the subscriber not only of the incident but also providing them instruction on alternative routes they could use to avoid the incident. An image of a map could also be included in the message.



This type of service can be automated through integration of existing traffic content aggregation systems. The messages also can be delivered to specially equipped in-dash navigation systems using the paging network or other broadcast technology.

### ***Merchandising and Promotion Scenario***



A pizza chain is looking for a way to reach a key customer segment that also enjoys auto racing. As part of an ongoing campaign, they entice their target audience to sign up for a racing news and promotions channel to receive up-to-the minute schedules, traffic, and parking information as well as factoids while at the race. The target audience is encouraged to subscribe to the list via pre-race emails as well as short-codes publicized at the event.

As subscribers approach the event, they receive helpful traffic and parking tips based on their direction of travel and location. While at the race, they receive information on their favorite driver, special appearance information, and other team factoids. All of these messages are "Brought to you by the Pizza Chain."



The day after the event, subscribers who were inside the delivery radius of one of the pizza chain's stores receive follow-up emails with specials based on the price-point of the store. The device is also programmed so that the user can press one button to be connected to an order center and easily accept the offer. The pizza chain can build its brand during the event, and continue the relationship after the event.

Advantages of this approach:

- All of the marketing would be prepared before the event, and require little activity in real-time to initiate the campaign.
- Recipients are opt-in and receive valuable information that is sent by the brand.
- Marketing messages can be tied to the point of action with callback numbers or other programmatic activity.
- The privacy of the recipient is maintained because of SquareLoop's patented technology.





## Conclusion

SquareLoop's unique, patented technology greatly amplifies the impact of location-based messages, both current and past, while also maintaining the privacy of the end user. Unique alert tones ensure that critical alerts are seen by the subscriber and are not overlooked.

Geographically targeted and time sensitive messages can be easily and quickly delivered to location-aware devices, including mobile phones, PDAs, and laptops. Public safety personnel can quickly reach emergency response personnel or alert individuals who are in a specified area. Traffic control managers can advise drivers of upcoming road closures, detours, or accidents and provide instructions to bypass the incident and promotional messages can be tailored to reach opted-in customers who visit their favorite store's vicinity. In other words, subscribers receive information they need where and when they need it...but don't receive information irrelevant to their physical locale in a given period of time.

Furthermore, SquareLoop technology protects the privacy of subscribers. Individual subscriber movements are never tracked because the technology determines message relevancy based on location information that is already resident on the device. Specific location data is never shared on a network or communicated to message administrators. This level of privacy protection ensures a critical level of trust for service subscribers.

SquareLoop's technology is carrier agnostic, and will work with virtually any mobile device or system that is location aware and can run an application. Content can include text, graphics, links, audio, video, or images. The platform provides for message authentication ensuring message authenticity and the message confirmation/response features provides for easy acknowledgment to messages.

This solution is offered in a high availability and scalable hosted environment with dedicated links into each of the cellular carriers ensuring low message latency. This architecture allows for single subscriber registration and provides the highest overall performance at the lowest cost.